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OSA # 4968-63

*Invoice and
Definitive*

10 September 1963

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Dear Hazel:

Subject: FY 1964 Spares, Revised Estimate FL-4004

Reference: [redacted], dated 22 June 1963

Enclosed is our revised estimate of the spares needed to support the MH-330, MH-357, MH-330 Signal Conditioner and Data Monitor operations for the fiscal year 1964.

We have completed a review of our MH-330 spares reflecting a reduction in our needs due to the availability of 2 complete systems from our FL-4001 contract. This had a marked effect in reducing our projected MH-330 costs (Exhibit III) [redacted]

The requirements for the MH-357 segment of the program increased slightly, [redacted] as we completely re-estimated the program. The quantities remain the same as contained within our initial quote, with the exception of one small item, Filter D907254, which we have eliminated.

Since our initial estimate, [redacted], we have established firm prices and quantities for the spare parts needed to support the repair of both our inertial components (DGG8001B-3 gyro and DGG116A3 accelerometer) and the Kearfott gyros (GG8050A1). For your information, these spares will be retained at Minneapolis for the MH units and at Little Falls, N. J. for the Kearfott units.

Also for your information, there is no allowance for the cost of procuring the sixteen navigation panel retrofit kits as contained within engineering change order #1; and no consideration has been made for anticipated changes within the coupler which we discussed with you on 6 September 1963.

Very truly yours,

[redacted]

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FRC:FHH:rc

Enclosures: Exhibits I through VIII

STATINTL cc: [redacted]

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FY 64 SPARES H 330

Parts List

<u>Nomenclature</u>	<u>Part Number</u>	<u>Quantity</u>
<u>Inertial Components - Sub-Assemblies</u>		
<u>Gyro (M-H) (Parts for 16) (Projected Parts to Support Repair of 16 Gyros)</u>		
Case	945027	4
Gimbal	949112-2	4
Torquer	478806-1	5
Header	949111-1	4
Bellows	478691	2
Cadle	950716-1	5
Thrust Jewell	937478	2
Ring Jewell	937479	1
Magnet Assembly	945029	4
Pivot	941800TAB	1
Top Dust Cover	478960	6
Dust Cover	944555TAB	4
Seal	472076	8
Seal	478748	9
"O" Ring	449209-1	8
"O" Ring	478752	9
Resistor	434758	9
Retainer Ring	424017-24	3
Sleeve	473118	8
N.P.	479061	10
Lube	6260-3	14
948660 Clip Assembly Flex Leads	6148	14
Shield	479814	8
Spacer Ring	478910	3
Stop Pin	478913	6
Spacer	940903	3
<u>Accelerometer (M-H) (Parts for 16) (Projected Parts to Support Repair of 16 Accelerometers)</u>		
Magnet Assembly	478603	2
Case	310044	2
End Plate	464238-4	2
Gimbal & Rotor	479986	6
Unisyn	47391	5
Pl. Holder less Pivot	941800-1	2
Thrust Jewell	937478	8
Ring	937479	1
Int. Sensor	475715-1	2
Bellows Assembly	475329	1
"O" Ring	449209-1	10
"O" Ring	478534	10
Seal Shim	472076-2	10
Disk	478536	10
Disk	939768	10
Bellows Plug	472215	10
Stop Pin	476257	10
Heater Cover	478531	11
Baffle Plate	310000	4

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Parts List

<u>Nomenclature</u>	<u>Part Number</u>	<u>Quantity</u>
<u>Accelerometer (M-H) Cont'd.</u>		
Shield	464439	2
Resistor	434758TAB	8
N.P.	477781	9
Flex Lead Mall	Spec 6148	14
Lube	MS 7280	14
<u>Gyros (Kearfott) (Projected Parts to Support Repair of Gyros)</u>		
Motor Float (Assembly)		8
Motor (Assembly)		4
<u>Parts - Gyros:</u>		
Connector	26-20P	10
Cover-Stator End	C315003582	10
Pin-Str. Head	C319023504	10
Holder-Exh. Tube	C392003529	14
Exhausting Tube	C348001000	14
Terminal, Feed Thru	4AS30WSSS	170
Pin, Straight Head	C319023505	14
Heating Element	C515003521	9
Sensing Element	C200003900	9
Bearing Jewell	C311083505	18
Nut, Float Wt.	C318003537	11
Nut, Float Wt.	C318003540	11
Nut, Float Wt.	C318003542	11
Pigtail	C539013505	90 Feet
Eyelet Metallic	C353003500	360
Pivot, Torquer End	C340063509	9
Pivot, Bellows End	C340063508	9
Bellows	C391003509	9
Cover, Bellows End	C315003584	9
Packing Preform	C356019548	54
Packing Preform	C356019549	27
Packing Preform	C356019543	27
Packing Preform	C356011007	27
Plate Peregrination	C360003530	18
Plate Identification	C360603195	18
Damping Fluid		4.5 Lbs.
Balancing Fluid		.9 Lbs.
Rotor Pickoff & Torquer	C200003667	2
<u>Parts - Float:</u>		
Float M/S	C200003659	7
Washer	C312003540	12
Washer	C312003541	12
Washer	C312003542	6
Washer	C312003543	6
Washer	C312003544	6
Washer	C312003545	12
Washer	C312003546	12

EXHIBIT IV

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Part List

<u>Nomenclature</u>	<u>Part Number</u>	<u>Quantity</u>
<u>Gyros (Kearfott) Continued</u>		
<u>Parts - Float Cont'd.:</u>		
Term, Feed Thru	C540020097	18
Pin Ground	C319003526	9
Insulator, Header	C511003521	15
Insert, Float	C318023521	20
Tube, Exhaust	C348003506	18
<u>Parts - Motor:</u>		
Bearing, Ball	C311001001	27
Insulator, Station End	C511071006	27
Wire, Hook-up	C101230006	18 Feet
Wire, Hook-up	C101730111	18 Feet
Wire, Hook-up	C101730222	18 Feet
Wedge	C527001001	280
Wire, Magnet	C101005070	18 Oz.
Flywheel & Support Set	C200013687	10
Support Shaft	C333003531	10
End Bell	C554003519	10
Rotor	C551003511	10
Screw	C320003069	72
Washer	C312003567	5
Washer	C312003569	7
Washer	C312003571	5
Washer	C312003573	7
Washer	C312003577	7
Washer	C312003581	5
Shaft & Bearing	C200003690	10
<u>Sub-Assemblies, Boards, Modules</u>		
<u>Signal Conditioner & Data Monitor Sub-Assembly</u>		
Terminal Board Assembly	D918885-1	1
Driver Amplifier	D918718-1	2
Step Motor	D907598-4	2
Encoder BCD, 5 Digit	D917517-3	2
Encoder BCD, 4 Digit	D917517-2	2
Encoder BCD, 4 Digit	D917517-4	1
Encoder BCD, 3 Digit	D917517-1	4
Terminal Board Assembly, Power Supply	D918730	1
Logic Pkg., Lead-Lag Sel	D917836-1	1
Flip Flop	D918498-1	20
Driver	D918505	10
N and Gate	D918501	22
Flip Flop	D918498-2	5
Shift Register	D918502-1	5
Shift Register Driver	D918503	4
One Shot	D918504	5
Transformer, Power	D918466-1	1
Transformer, Power	D918467-1	1
Relay Control	D917690-1	1

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Parts List

<u>Nomenclature</u>	<u>Part Number</u>	<u>Quantity</u>
<u>Signal Conditioner & Data Monitor Sub-Assembly Continued</u>		
Servo Amplifier	D917482	3
Diode, Zener	IN 1483	2
Diode, Zener	D905279-1	2
Diode, Zener	IN 3027A	2
Diode, Zener	D905222-8	2
Diode, Zener	IN 756A	2
Diode, Silicon	IN 645	12
Diode, Silicon	IN 3206	10
Time Delay Relay	D911080-9	2
Latching Relay	D915520-2	2
Std. DPST Relay	D904857-10	1
Std. DPST Relay	D904857-9	1
Readout, Digital	AD917767-1	1
Logic Module, SS	AD918504-1	2
Logic Module, N	AD918501-1	4
Logic Module, FF	AD918498-1	1
Driver, Lamp	AD918718-1	4
Diode	IN 1483	2
Diode	IN 645	12
Diode	IN 3027B	2
Diode	IN 756A	2
Diode	AD905222-13	2
Relay	432255-3	1
Relay	AD904857-10	1
Transistor	2N492	1
<u>Power Supply</u>		
Voltage Regulator	D918948	2
<u>Repeater Sub-Assembly</u>		
Module Assembly	907848	1
<u>Computer Modules</u>		
Comp. Assembly Type #1	D919103-1	6
Comp. Assembly Type #2	D919136-1	1
Comp. Assembly Type #151	D919137-1	9
Comp. Assembly Type #150	D919138-1	2
Comp. Assembly Type #4	D919350-1	1
Comp. Assembly Type #22	D919368-1	1
Comp. Assembly Type #29	D919375-1	1
Comp. Assembly Type #31	D919377-1	3
Comp. Assembly Type #41	D919387-1	2
Comp. Assembly Type #42	D919388-1	1
Comp. Assembly Type #43	D919390-1	1
Comp. Assembly Type #45	D919392-1	1
Comp. Assembly Type #53	D919401-1	2
Comp. Assembly Type #54	D919402-1	1

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Parts List

<u>Nomenclature</u>	<u>Part Number</u>	<u>Quantity</u>
<u>Computer Modules Continued</u>		
Comp. Assembly Type #55	D919403-1	1
Comp. Assembly Type #56	D919404-1	3
Comp. Assembly Type #57	D919405-1	1
Comp. Assembly Type #61	D919409-1	2
Comp. Assembly Type #69	D919417-1	2
Comp. Assembly Type #87	D919435-1	1
Comp. Assembly Type #94	D919442-1	2
Comp. Assembly Type #95	D919443-1	1
Comp. Assembly Type #116	D919464-1	2
Comp. Assembly Type #120	D919468-1	1
<u>Computer Boards</u>		
Board #1	D919977	1
Board #2	D919978	1
Board #3	D919979	5
Board #4	D919980	7
Board #5	D919981	2
Board #6	D919982	5
Board #7	D919983	1
Board #8	D919984	1
Board #9	D919985	1
Board #10	D919986	5
Board #11	D919987	1
Board #12	D919988	4
Board #13	D919989	2
Board #14	D919990	1
Board #15	D919991	4
Board #16	D919992	1
Board #17	D919993	1
<u>Memory Drum Sub-Assemblies</u>		
Recording Head Assembly	D910214-18	4
Recording Head Assembly	D915649	2
Recording Head Assembly	D909723-19	2
Recording Head Assembly	D911596-20	2
<u>Coupler Sub-Assemblies</u>		
<u>Boards:</u>		
Gyro Torquing Current Gate	D905269-1	2
Accel. Rebal. Logic & Lvl. Disc	D905156-1	3
Accel. Rebal. Current Gate	D905405	1
Signal Gen. Demod.	D917983-1	1
D.C. Amplifier	D915964	4
T P G	D914481	1
400 cps Demod Driver	D904803	1
Summing Network & Oven	D910546	3
Resolver & Filter Assembly	D918146-1	1

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Parts List

<u>Nomenclature</u>	<u>Part Number</u>	<u>Quantity</u>
<u>Coupler Sub-Assemblies Continued</u>		
<u>Modules:</u>		
Diff. Amplifier	D913557	2
Diff. Amplifier DC Input	D913579	1
High Frequency Module	D910368	6
W/M A2	D907093	2
W/M A3	D907106	2
W/M A4	D907117	2
W/M A1	D915965	2
Chopper Stab Amp 1st Stage	D913502	1
Chopper Stab Amp 2nd Stage	D913503	1
Chopper Stab Amp 3rd Stage	D913504	1
Chopper Stab Amp 4th Stage	D913505	1
Demod. Bridge	D913097	1
H.F. Amp	D913489	1
Flip Flop	D906707	6
7.2 KC Input	D906747	1
28.8 KC Input	D914381	1
400 cps Input	D914733	2
Blocking Oscillator	D913129	4
Blocking Oscillator	D913656	4
Blocking Oscillator	D913669	2
Assembly Gate Rect.	D908860	2
Demod. Assembly	D910474	2
Welded Comp. Assembly	D910466	2
Transformer	D905250	3
Transformer	D905465	2
Transformer	D905514	2
Transformer	D905423	2
Transformer	D905814	2
Output XF MR Assembly 400	D905256	2
Diff. Amp AC Input	D913576	2
Transformer	D905422-1	1
Radio Noise Filter	D918143-1	1

Platform Electronics Boards & Sub-Assemblies

<u>Boards:</u>		
Gimbal Control Amplifier	D904640-1	1
Gimbal Control Amplifier	D904640-4	1
Gimbal Control Amplifier	D904640-5	2
<u>Sub-Assemblies:</u>		
Transformer	D905093	2
Transformer	D905013	2
Transformer	D905015	2
Transformer	D905017	2

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Parts List

<u>Nomenclature</u>	<u>Part Number</u>	<u>Quantity</u>
<u>Platform Sub-Assemblies</u>		
Temperature Control Amplifier	D907953	12
TB-1	D907977-1	2
TB-2	D907977-2	2
TB-4	D908183-2	2
TB-5	D908133	2
TB-6	D908210	2
TB-7	D917473-1	2
Pre Amplifier Board Assembly	D904756-3	2
Bracket & XF MR Assembly	D908733	2
Triple Pre-Amp	D908151	3

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EXHIBIT VIII

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Parts List

<u>Nomenclature</u>	<u>Part Number</u>	<u>Quantity</u>
<u>Platform - Sub-Assemblies</u>		
Temperature Control Amplifier	D907953	3
Triple Pre-Amp Assembly	D908151	1
<u>Coupler Boards & Modules</u>		
<u>Boards:</u>		
Gyro Torquing & Current Supply	D913488	1
Gyro Torq. Logic	D905069	1
Gyro Torq. Current Gate	D905269	2
Accel. Rebal. Current Supply	D910019	2
Accel. Rebal. Logic & Lvl. Disc	D905156-1	2
Accel. Rebal. Logic & CFF	D906174	1
Accel. Rebal. Logic PP & Disc	D906176	1
Accel. Rebal. Current Gate	D905405	3
Signal Gen. Demod.	D917983-1	1
Signal Gen. Amplifier	D905457	1
14.4 KC Demod Driver	D905334	1
D.C. Amplifier	D915964	2
Freq. Divider & Ring Ctr.	D912219	1
3 Ø, 400 cps Power Amplifier	D904796	1
VORPA	D915525	1
POSCA	D905686-1	1
TPG	D914481	1
Voltage Ref. Iso. Amp	D904646	1
Voltage Ref. Supply Regulator	D904642	1
Resolver & Filter Assembly	D918146-1	1
Summing Network & Oven	D919077-1	1
<u>Modules:</u>		
Radio Noise Filter	D918143-1	1
400 cps Demod Driver	D904803	1
Transformer	D905422-1	1
Gate Power Rect. Assembly	D908860	1
Filter	D910291	1
Blocking Osc., TPG	D913669	1
Flip Flop	D906747	1
Blocking Osc., TPG	D913656	1
Flip Flop	D914381	1
Flip Flop	D913129	1
Flip Flop	D914733	1
Flip Flop	D906707	1
High Freq. Amp Assembly	D910368	1

EXHIBIT VIII

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Parts List

<u>Nomenclature</u>	<u>Part Number</u>	<u>Quantity</u>
<u>Platform Electronics Boards</u>		
Gimbal Control Amplifier	D904640-1	1
Gimbal Control Amplifier	D904640-2	1
Gimbal Control Amplifier	D904640-4	1
+ 40 V DC Rect. & Reg. P.S.	D904800	1
- 35 V DC Reg. P.S.	D904801	1
+ 35 V DC Reg. P.S.	D904802	1

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